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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,801	04/21/2006	Masato Nomiya	M1071.1967	5833

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EXAMINER

NGUYEN, KHANH TUAN

ART UNIT	PAPER NUMBER
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1796

MAIL DATE	DELIVERY MODE
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10/09/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/576,801

Applicant(s)

NOMIYA ET AL.

Examiner

Khanh T. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The preliminary amendment filed on 04/21/2006 is entered and acknowledged by the Examiner. Claims 1-20 are currently pending in the instant application.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 04/21/2006 has been regarded by Examiner and made of record in the application file.

Drawings

4. The drawing(s) submitted on 04/21/2006 has been regarded by Examiner and made of record in the application file.

Specification

5. The abstract of the disclosure is objected to because the word "glass" is misspelled in the phrase, "The electrically conductive paste contains a metal powder, a grass frit, and an organic vehicle." Correction is required. See MPEP § 608.01(b).

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6. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Claim Objections

7. Claim 4 is objected to because of the following informalities: Claim 4 is objected to because the word "inorganic" is misspelled. Appropriate correction is required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

9. The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

10. Claims 1-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Kashima et al. (U.S. Pat. 5,932,326 hereinafter, "Kashima").

Kashima discloses a metalizing paste used for wiring board. The metalizing paste comprises of metal powder having a particle size within the range of 0.5-10 microns and inorganic glass (borosilicate glass or aluminoborosilicate glass) with a softening temperature within the range of 800-950 degrees Celsius and mixed with organic solvent. The metalizing paste can be laminated onto a ceramic green sheet

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and sinter at a low temperature of 800-1100 degrees Celsius (Col. 1, lines 5-60; Col. 4, lines 35-67; Examples; Table 1 and Table 2).

The reference specifically or inherently meets each of the claimed limitations.

The reference is anticipatory.

In addition, Applicant is reminded it has been held by the court that the recitation that an element is "adapted to" perform or is "capable of" performing a function is not a positive limitation but only requires the ability to so perform. The recitation of a new intended use for an old product does not make a claim to that old product patentable, see *In re Schreiber*, 44 USPQ2d 1429 (Fed. Cir. 1997).

11. Claims 1, 2, 4-9, 15 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Saito et al. (U.S Pat. 6,762,369 hereinafter, "Saito").

With respect to claims 1, 2, 4-7, 15 and 16, Saito discloses a multiplayer ceramic substrate that is sufficiently flat and having a high dimensional accuracy after firing (sintering) while preventing defects that occur in the vicinity of electrodes (Col. 1, line 66 to Col. 2, line 3). The said multiplayer ceramic substrate comprises a glass ceramic body, a conductive pattern, and a via conductor (i.e. electrically conductive paste or conductor composition). A conductive pattern is formed on the glass ceramic substrate surface and the via conductor makes a connection between the conductive pattern (Col. 2, lines 4-10). The said multiplayer ceramic substrate is produced by stacking a plurality of ceramic green sheets so that at least one of the green sheets has via holes filled with a conductor composition and firing the laminate of the ceramic green sheets

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(Col. 2, lines 25-33). The said multiplayer ceramic substrate is fired to sinter at 850-950 degrees Celsius (Col. 5, lines 46-47). Saito further discloses a green sheet prepared by using an inorganic composition that is not sintered at the firing temperature of each of the green sheets constituting a laminate (Col. 1, lines 36-39).

Saito also discloses the conductor composition comprising of conductive powder (Ag, Au, Pt, and Pd) and a Mo compound or a Mo metal (Col. 2, lines 34-38). The conductive powder has an average particle diameter in the range of 0.5-10 microns (Col. 4, lines 39-46). The amount of Mo compound (e.g. MoO_3 , MoSi_2 or Mo metal) is from 0.05-10 parts by weight in terms of Mo metal with respect to 100 parts by weight of conductive powder (Col. 2, lines 38-40). Saito discloses said conductor composition further comprising a glass frit in the amount of not more than 10 parts by weight to improve adhesive strength in firing process and having a softening temperature of greater (not less) than 650 degrees Celsius (Col. 2, lines 47-52 and Col. 2, lines 59-63). The conductive powder, the Mo compound, and glass frit are mixed together with an organic vehicle (e.g. terpeneol) and cellulosic resin (Col. 5, lines 18-23).

The reference specifically or inherently meets each of the claimed limitations.
The reference is anticipatory.

In addition, Applicant is reminded it has been held by the court that the recitation that an element is "adapted to" perform or is "capable of" performing a function is not a positive limitation but only requires the ability to so perform. The recitation of a new intended use for an old product does not make a claim to that old product patentable, see *In re Schreiber*, 44 USPQ2d 1429 (Fed. Cir. 1997).

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Regarding claims 8 and 9, Saito discloses the conductor composition wherein the inorganic glass component is selected from "Alumina" Al_2O_3 , "Zirconia" ZrO_2 , SiO_2 , TiO_2 , and MgO (Col. 4, lines 2-4).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 1, 2, 5-10, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa et al. (U.S Pat. 4,400,214 hereinafter, "Ogawa") and further in view of Hayama et al. (U.S Pat. 6,846,375 hereinafter, "Hayama").

Ogawa discloses a conductive paste useful for producing conductor patterns adherent to dielectric substrate substrates. The conductive paste comprises of metal powders and binder powders (i.e. glass frit) dispersed in liquid medium. The metal powder is an alloy of Cu, Al and at least one of Zn and Ag (Col. 2, line 1-5). The said metal powder having a diameter (particle size) of 0.5-5.0 microns (Col. 4, lines 14-16). Ogawa also discloses the glass powder is an inorganic binder composed mainly of B_2O_3 , SiO_2 , and at least Na_2O , K_2O and Li_2O (Col. 2, lines 21-25).

Ogawa failed to disclose the softening point of the inorganic glass frit.

In the same field of endeavor, Hayama discloses a conductive paste for manufacturing multilayer ceramic wiring board comprising of metal powders having a diameter of 1-10 microns are mixed in a solvent with a glass frits having both high softening temperature and low softening temperature. Hayama further discloses a conductive paste K, using a glass frit having a softening temperature of 790 degrees Celsius, shows best result and conductive paste N having a softening temperature of 900 degrees Celsius shows poor sintering condition (Table 2; Col. 5, lines 63 to Col. 6, line 5).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Ogawa's conductive paste by incorporating a glass frit wherein the softening point is in range of 700-900 degrees Celsius as taught by Hayama, in order to provide a ceramic multilayer wiring board that has no cracks in the glass ceramic. The burden is upon the applicant to prove otherwise.

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15. Claims 3, 10-14, and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito (U.S. Pat. 6,762,369) or Ogawa et al. (U.S. Pat. 4,400,214) in view of Hayama (U.S. Pat. 6,8467,375).

Saito, Ogawa and Hayama are relied upon as set forth above. Saito, Ogawa and Hayama did not explicitly disclose said conductor paste composition having a glass frit wherein the viscosity within the range of 800 to 950 degrees Celsius satisfies the instant claimed formula $\log(\eta/\text{Pa}\cdot\text{s}) = 4$. The said formula can be satisfied when the viscosity $(\eta) = 10,000 \text{ Pa}\cdot\text{s}$ within 800 to 950 degrees Celsius.

However, Saito or Ogawa in view of Hayama disclose the claimed electrically conductive paste containing metal powder, a glass frit and an inorganic vehicle within the claimed proportion for the same utility. Therefore, one of ordinary skill in the art would have had a reasonable expectation of success because such a conductive paste having a viscous morphology can be fired at temperatures within 800 to 950 degrees Celsius is expressly suggested by Saito or Ogawa in view of Hayama. Thus, Saito or Ogawa in view of Hayama is considered to read on the claimed limitations. The burden is upon the applicant to prove otherwise. *In re Fitzgerald*, 205 USPQ 594.

Moreover, the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable, *In re Best*, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977). See also MPEP 2112 I.

Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh T. Nguyen whose telephone number is (571) 272-8082. The examiner can normally be reached on Monday-Friday 8:00-5:00 EST PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas McGinty can be reached on (571) 272-1029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



KTN
09/28/2007



Mark Kopec
Primary Examiner